

**AMERICAN SOCIETY OF HEATING, REFRIGERATING AND
AIR-CONDITIONING ENGINEERS, INC.
1791 Tullie Circle, NE Atlanta, GA 30329 404-636-8400**

TC/TG/TRG MINUTES COVER SHEET

(Minutes of all meetings are to be distributed to all persons listed below within 60 days following the meeting.)

TC/TG/TRG NO. TC 7.5 DATE: June 26, 2007

TC/TG/TRG TITLE: Smart Building Systems

DATE OF MEETING: June 26, 2007 LOCATION: Long Beach, CA

Members Present	Appt	Members Absent	Appt	Ex-Officio Members and Additional Attendance
Michael Brambley, Chair, Research Subc., (V)		Osman Ahmed, (CM)		Pete Secor
Robert Old, (V)		Jerine Ahmed, (CM)		George Naim
Steve Blanc, (V)		Agami Reddy, (CM)		Brian Coffey
Michael Brandemuehl, (V)		Barry Rearden, (CM)		Reinhard Seidl
James W. Gartner, (V)		Jonathan Wright, IM (V)		Roger Nautz
Rich Hackner, Building/utility Interface Subc., (CM)		Narendra Amamani, (CM)		Michael Day
Carol Lomonaco, Secretary, Program Subc., (V)		Dave Branson, (CM)		Mike Galler
Jin Wen, FDD Chair, (V)		Marty Burns, (CM)		Kristin Henemeirer
Peng Xu, Vice Chair, Research Subc., (V)		Jim Butler, (CM)		Donald Prather
James Braun, (V)		Charles Culp, (CM)		Janice Peterson
William Healy, Wireless Application Subc., (V)		Arthur Dexter, (CM)		Haorong Li
Chariti Young, (CM)		Piotr Domanski (CM)		Daniel Choiniere
Xiaohui Zhou, (CM)		Mohsen Farzad (CM)		
John House, Handbook (CM)		Mark D. Johnson, (CM)		
Philip Haves, (CM)		David Kahn, (CM)		
Srinivas Katipamula, (CM)		Michael Kintner-Meyer, (CM)		
Pornsak Songkakul, (CM)		Mingsheng Liu, (CM)		
Vernon A. Smith, (CM)		Darrell Massie, (CM)		
Carlos Haiad, (CM)		John Mitchell, (CM)		
Barry Bridges, (CM)		Ron Nelson, (CM)		
Gene Strehlow, (CM)		Hung Manh Pham, (CM)		
Keith Temple, (CM)		Kinga Porst, (CM)		
Arun Vohra, (CM)		Mike Pouchak, (CM)		
		Andrew Price, (CM)		
		Ashok N. Kadakia (CM)		
		Glenn Remington, (CM)		
		Todd Rossi, (V)		
		James Winston, (CM)		
		Martha Jo Brook, (CM)		
		David Bornside, (CM)		
		Natascha Castro, Web Master, (CM)		
		Mari Corsi, (CM)		
		Sharon Dinges, (CM)		

Members Present	Appt	Members Absent	Appt	Ex-Officio Members and Additional Attendance
		Cliff Federspiel, (CM)		
		John Seem, (CM)		
		Ahmed Husaunndee, (CM)		
		George Kelly, (CM)		
		William Pienta, (CM)		
		Les Norford, (CM)		

(V) = voting member

(CM) = corresponding member

DISTRIBUTION:

ALL MEMBERS AND CORRESPONDING MEMBERS OF TC/TG/TRG,

TAC CHAIR: Patricia Graef

TAC SECTION HEAD: Janice Peterson

ALL COMMITTEE LIAISONS AS SHOWN ON TC/TG/TRG ROSTERS:

Program: William Klock

Standards: Jerry W. White Jr.

Research: Patrick Hughes

Special Publications: Harvey Sachs

CTT: Joseph Anderson

Staff Liaison (Stds): Claire Ramspeck

Prof. Dev.: Gordon Holness

Staff Liaison (Resch/Tech Srvc): Michael Vaughn

"These draft minutes have not been approved and are not the official, approved record until approved by this (council/committee)."

ASHRAE TC Activities Sheet

DATE: June 26, 2007

TC NO. TC 7.5

TC TITLE: Smart Building Systems

CHAIR: Mike Brambley

VICE CHAIR: Peng Xu

TC Meeting Schedule

Location, past 12 mo.	Date	Location, planned next 12 mo.	Date
Quebec City	6/27/06	New York City	1/24/08
Dallas	1/30/07	Salt Lake City	6/24/08

TC Subcommittees

Subcommittee	Chair
Secretary	C. Lomonaco
Fault Detection and Diagnostics	J. Wen
Wireless Applications	B. Healy
Building/Utility Interface	R. Hackner
Research	P. Xu
Program	C. Lomonaco
Handbook	J. House

Program List for 2007 Long Beach Meeting:

Title	Chair	Status
Transactions "Automated Fault Detection and Diagnostics (FDD)"	John House	06/07
Poster Session: "Formulation of Generic Methodology for Assessing FDD Methods and Its Specific Adoption to Large Chillers."	Agami Reddy	06/07

Current Research Projects

Current Research Projects Technology Development Subcommittee

1275-RP "Evaluation and Assessment of Fault Detection and Diagnostic Methods for Centrifugal Chillers – Phase II" (Phil Haves – PMSC Chair)
Completed. PMS recommended approval by TC with edits.

Testing and Evaluation

1274-RP "Field Performance Assessment of Package Equipment to Quantify the Benefits of Proper Service" (Todd Rossi – PMSC Chair)

1312-RP, "Tools for Evaluating FDD Methods for AHUs" – WS-1312. Contractor Selection in Denver. (Phil Haves, PMSC Chair)

2007 – 2008 Research Plan

Proposed Priority	Old Priority	Project	Contributors	Status
1	1	Fault Detection and Diagnostics for Centrifugal Chillers – Phase 3: Real-Time Implementation	WS Contributors Srinivas Katipamula. RTAR Contributors: Srinivas Katipamula, John House, Todd Rossi, Jim Braun, Natascha Castro	Approved and voted on at Long Beach meeting.
2	11	Demand response optimization protocol and integrated training	Rich Hackner	Approved and voted on at Long Beach meeting.
3	4	Development of metrics to evaluate benefits of sensor networks in buildings (new title)	RTAR Contributors Jin Wen and Agami Reddy. Revised by Bill Healy	Approved and voted on at Long Beach meeting.
4	5	“What If” Emulation Tool for Training and Strategizing on Building Operations	Steve Blanc	Approved and voted on at Long Beach meeting.
Not Prioritized per Long Beach Mtg June 2007	3	FDD for Supermarket Refrigeration	RTAR Contributors Daniel Choinere and John House	Approved in Denver. Discussed in Quebec City. Revised work statement to be drafted for Dallas. TC 10.7 is assisting and will cosponsor. Rolls off the RAC list in August 2007. Need to narrow the scope a bit. John House will provide another draft in Long Beach meeting.
Not Prioritized per Long Beach Mtg June 2007	5	“What If” Emulation Tool for Training and Strategizing on Building Operations	Steve Blanc	Received comments. Need to define a clear application, education, FDD? Steve will revise the document.
Not Prioritized per Long Beach Mtg June 2007	9	Status and benefits of demand response program for residential buildings	Jin Wen, Srinivas, Bill, Palieuta,	More work
Not Prioritized per Long	8	Locate and identify IEEE 802.15.4 RF sources	Bob Old	Need justification and value to ASHRAE. Need a clear HVAC application.

Beach Mtg June 2007				
Not Prioritized per Long Beach Mtg June 2007	6	Whole-Building FDD	Les Norford	On hold. Les is still interested in pursuing the idea.
Not Prioritized per Long Beach Mtg June 2007	7	Conceptual Design of a Self-Configuring HVAC Control System	Michael Kintner-Meyer	Revised draft WS discussed in Denver. Revisions planned. Tabled indefinitely. The RTAR has rolled off the RAC list.

Co-Sponsorship

TC	Topic #	Title	Status	Action Required
		Real-Time Optimal Control in a Distributed Environment	Jim Braun, George Kelly, Maria Corsi	RTAR submitted by TC 7.4, TC 7.5 is co-sponsor. RTAR has been approved, No Progress to report
7.4	1390-RTAR 2	SHORT-TERM CURTAILMENT OF HVAC LOADS IN BUILDINGS	RTAR accepted at Tech Weekend 2005. No WS	On current plan as approved RTAR. TC knows they need to submit WS before 8/15/07 or it expires from plan. Believe they will have WS by then. Still revving WS
7.4	2005-26 (old RTAR #)	REAL-TIME OPTIMAL CONTROL IN A DISTRIBUTED ENVIRONMENT	Was once on the Impl Plan as a "prioritized" project, but rolled off before TC could reach consensus on a WS	Topic has been dropped from plan. Still working on WS. TC plans to re-submit an RTAR.
7.4	1194-RP/A 3	DYNAMIC MODELING OF CHILLED WATER COOLING COILS	Final report approved but need tech paper from PI to close out	PMS met. Paper at Long Beach PMS Chair (Brandmuehl) says two papers already submitted to ASHRAE Research Journal.
7.4	1252-RP/A	INTERACTIONS BETWEEN DYNAMIC ELECTRICAL RATES AND THERMAL ENERGY STORAGE CONTROL	At Quebec the PMS recommended acceptance of final report. No quorum so full TC could not act.	PMS met. Rec to accept final report tomorrow. TC plans an email ballot to rec that ASHRAE accept final report.
7.4	1313-RP/A 4	EVALUATION OF BUILDING THERMAL MASS SAVINGS (PREVIOUSLY DEMONSTRATION OF BUILDING THERMAL MASS SAVINGS)	TC did a formal motion. They want clarification of whether a PMS chair can work directly with MORTS to request an extension without bringing it to the TC for a formal vote. They have no problem with this PMS chair but some others perhaps would be best not to have this authority.	PMS met. Ongoing RPMORTS says there has been a no cost extension to Mar 07 but need a new end date. TC says Mar 07 is the new estimated end date. As a procedural issue, TC wants feed back on whether PMS chair has authority to directly request an extension without making that rec to full TC for a vote.
7.4	1340-RP 1	INTELLIGENT CONTROL OF COMBINED HEAT AND POWER SYSTEMS	Contract recently finalized and work started. PI met with PMS for first time in Quebec.	PMS to meet here. None
7.4	1440-RTAR	OCCUPANCY DETECTION FOR ENHANCED BUILDING OPERATIONS AND SECURITY	RTAR returned at Tech Weekend.	Narrowing scope. Still working to revise RTAR

7.5	1429-RTAR 5	FAULT DETECTION AND DIAGNOSTIC METHODS FOR SUPERMARKETS	RTAR accepted at Tech Weekend 2005. No WS. TC 10.7 voted to co-sponsor ay Quebec and help with WS.	On current plan as approved RTAR. John House authored WS. Should be received for Long Beach TC knows they need to submit WS before 8/15/07 or it expires from plan. They expect to have a WS to vote forward in Dallas.
7.5	1274-RP/A	FIELD PERFORMANCE ASSESSMENT OF PACKAGE EQUIPMENT TO QUANTIFY THE BENEFITS OF PROPER SERVICE AND DETERMINE THE LONG TERM NEED FOR MONITORING, FDD AND CONTINUOUS COMMISSIONING TECHNOLOGY	A no cost extension has already been granted. PMS approved high level data collection protocol on assumption ADM was competent. Protocol spec'd what was to be collected. Then ADM collected the data on 148 of 375 rooftop units, but over 12 hr instead of simultaneously, so data may be useless. Also when ADM goes to a sampled rooftop but the unit is DOA, they move on to another without documenting that the sampled unit was DOA. May not be adequately documenting sample implementation. TC has renegotiated protocol with ADM, but only 4 rooftops addressed since. The ADM principal Taghi Alereza only shows at meetings when there is a crisis (Chicago), and the other spokesmen Dan Mort does not appear to have hands on PI control of project. TC believes ASHRAE has paid ADM about \$80k of \$139k budget already, and wants no further payments until they approve them. ADM must prove to PMS they can do it right. ADM claims they have used all the \$\$ but are committed to do the rest of sample.	No new news. Hope to be finished by Jan 2008. They were halted, told to change protocol, and they agreed to do it. TC requests ASHRAE make no further payments without PMS approval. TC wants to at least make sure the last 227 sampled RTUs are characterized properly. The TC will revisit the sample size calcs using observed variation from the good data as it rolls in, to determine whether the 227 sample is large enough to yield statistically significant results. If not, and assuming ADM does perform competently on the last 227 (and post-service characterizations on sub-sample of 75), the TC may, in the future, recommend ASHRAE provide additional funding to fulfill sample size needs based on actual variation observed in the good data. TC wants feed back on how RAC would view such a suggestion.
7.5	1275-RP/A	EVALUATION AND ASSESSMENT OF FAULT DETECTION AND DIAGNOSTIC METHODS FOR CENTRIFUGAL CHILLERS-PHASE II	A no cost extension has already been granted.	TC voted to approve the final report at Quebec. PMS chair to fill out close out form. Not sure if done
7.5	1312-RP/A	TOOLS FOR EVALUATING FAULT DETECTION AND DIAGNOSTIC METHODS FOR AIR HANDLING UNITS	Project just started before Chicago.	PMS met. Meet tomorrow, ongoing Slightly behind but PI and TC are optimistic they will catch up.
7.5	2005-25 RTAR	FAULT DETECTION AND DIAGNOSTICS FOR CENTRIFUGAL CHILLERS - PHASE 3: REAL-TIME IMPLEMENTATION	In the past this project had an RTAR on the Impl Plan and an approved WS. However it could not begin until 1275-RP was completed, and so it rotated off the plan while waiting.	Topic has been dropped from the plan. Will submit final WS next month. TC 8.2 co-sponsoring. Now that 1275-RP is completed, the TC is refining the WS based on what was learned. TC 8.2 voted to co-sponsor and is helping to refine the WS. TC plans an email ballot and will submit a WS by 8/15/07.
7.5	2004-23 RTAR	DESIGN AND DEMONSTRATION OF A SELFCONFIGURATION FOR AN HVAC CONTROL SYSTEM	Tabled indefinitely. It is dead. Could not reach consensus us on a WS.	RTAR was returned. Dead. None.
7.5	1430-RTAR	DEVELOPMENT OF METRICS TO EVALUATE BENEFITS OF SENSOR NETWORKS IN BUILDINGS	This RTAR was returned with comments 11/4/05 (Daniel).	RTAR was returned. Still working on revised RTAR TC is still re-working RTAR. Author was not in Quebec. TC plans an email ballot and re-submission by 12/15.

Technical Papers from Sponsored Research

RP-1011

Kintner-Meyer, M, Burns, M. 1999. "Utility/Energy Management and Control Systems (EMCS) Communication Protocol Requirements" Final report for ASHRAE Research Project RP-1011. Available on the TC 7.5 web site.

Kintner-Meyer, M.; Burns, M. 2000. Utility/Customer Information Services Part1: Descriptions of Services and Discussion on Interoperability for Service Implementation. ASHRAE Transactions. Vol. AT-01-0-0. American Society of Heating, Refrigeration, and Air-conditioning Engineers, Inc., Atlanta, GA.

Kintner-Meyer, M. Burns, M. 2000. *Utility/Customer Information Services Part 2: Data Object Modeling and Mapping to BACnet*. ASHRAE Transactions. Vol. AT-01-0-0. American Society of Heating, Refrigeration, and Air-conditioning Engineers, Inc., Atlanta, GA.

RP-1020

Norford, L. K., J. A. Wright, R. Buswell, and D. Luo. 2000. "Demonstration of Fault Detection and Diagnosis Methods in a Real Building (ASHRAE 1020-RP)." ASHRAE 1020-RP Final Report.

Luo, D., L. K. Norford, S. R. Shaw, and S. B. Leeb. 2002. "Monitoring HVAC Equipment Electrical Loads from a Centralized Location - Methods and Field Test Results." ASHRAE Transactions Vol. 108(1).

Shaw, S. R., L. K. Norford, D. Luo, and S. B. Leeb. 2002. "Detection of HVAC Faults via Electrical LoadMonitoring." International Journal of HVAC&R Research, 8(1):13-40.

Norford, L.K., J. A. Wright, R. A. Buswell, D. Luo, C. Klaassen, and A. Suby. 2002. "Demonstration of Fault Detection and Diagnosis Methods for Air-Handling Units (ASHRAE 1020-RP)." International Journal of HVAC&R Research, 8(1):41-72.

RP-1043

Bendapudi, S., Braun, J.E., and Groll, E.A., "A Dynamic Model of a Centrifugal Chiller System – Model Development, Numerical Study and Validation," ASHRAE transactions, Vol. 111, Pt. 1, 18 pages, 2005.

Final report for ASHRAE Research Project RP-1043, " Fault Detection and Diagnostic Requirements and Evaluation Tools for Chillers" is available on the TC 7.5 web site.

Technical paper from 1043-RP, Comstock, M.C., Braun, J.E., and Groll, E.A., "The Sensitivity of Chiller Performance to Common Faults," International Journal of HVAC&R Research, Vol. 7, No. 3, pp. 263-279, 2001.

Technical paper from 1043-RP, Comstock, M.C., Braun, J.E., and Groll, E.A., "A Survey of Common Faults for Chillers," ASHRAE Transactions, Vol. 108, Pt. 1, 2002.

RP-1139

Andersen, K.K., and Reddy, T.A., 2002. "The Error in Variable (EIV) Regression Approach as a Means of Identifying Unbiased Physical Parameter Estimates: Application to Chiller Performance Data", International Journal of HVAC&R Research, vol.8, no.3, pp. 295-309, July.

Reddy, T.A. and Andersen, K.K., 2002. "An Evaluation of Classical Steady-state Off-line Linear Parameter Estimation Methods Applied to Chiller Performance Data", International Journal of HVAC&R Research, vol.8, no.1, pp.101-124.

Reddy, T.A., Niebur, D., Andersen, K.K., Pericolo, P.P. and Cabrera, G., 2003. "Evaluation of the Suitability of Different Chiller Performance Models for Online Training Applied to Automated Fault Detection and Diagnosis", International Journal of HVAC&R Research, Vol.9, No.4, pp. 365-384, October.

Reddy, T.A., Andersen, K.K. and Niebur, D., 2003. "Information Content of Incoming Data During Field Monitoring: Application to Online Chiller Modeling", International Journal of HVAC&R Research, Vol.9, no.4, pp.385-414, October.

TC Sponsored Symposia, Transactions, Poster Sessions (past 3 years, present, planned)

Title	Date (Given or Planned)
FDD, Operation and Maintenance of HVAC Systems (Kelly, TC 1.4 co-sponsor)	Kansas City, 6/03
Automated Functional Testing: Methodologies and Air-Handling Unit Applications (House)	Orlando, 1/05
Software Tools for Enhanced Building Operation (House)	Dallas, 1/07
Automated Fault Detection and Diagnostics (FDD)	Long Beach 6/07
Formulation of Generic Methodology for Assessing FDD Methods and Its Specific Adoption to Large Chillers	Long Beach 6/07

TC Sponsored Seminars (past 3 years, present, planned)

Title	Date (Given or Planned)
Wireless Sensors for Building Applications (Healy, TC 1.4 co-sponsor)	Kansas City, 6/03
Improved Operations for California Buildings -Part 1 (Haiad, TC 7.4 lead)	Anaheim, 1/04
Improved Operations for California Buildings -Part 2 (Scruton, co-sponsored with TC 7.4)	Anaheim, 1/04
Automated Commissioning Tools (Maria Corsi, co-sponsored with TC 7.3)	Anaheim, 1/04
State of the Art Issues for DDC Systems (Atkinson, TC 1.4 lead)	Anaheim, 1/04
Models for Automated Building/HVAC Fault Detection and Diagnostics (Brambley, co-sponsored with TC 4.7)	Nashville, 6/04
Demand Response and Building Control (Xu, TC 7.4 lead)	Nashville, 6/04
Control Challenges and Opportunities with Emerging DDC Technologies (Bridges, TC 1.4 lead)	Orlando, 1/05

Future Intelligent Control Systems: They are Here Today (Braun, TC 7.4 lead)	Orlando, 1/05
Load Management: Why You Should Care and What Technology is Emerging (Katipamula, TC 1.4 and TC 7.4 co-sponsor)	Chicago, 1/06
User Experience with HVAC Fault Detection and Diagnostics – Part 1 (Cherniack, TC 1.4 and 7.6 co-sponsor)	Quebec City, 6/06
User Experience with HVAC Fault Detection and Diagnostics – Part 2 (Thomle, TC 1.4 and 7.6 co-sponsor)	Quebec City, 6/06
Emerging Wireless Technologies (Brambley)	Dallas, 1/07
Approaches to Deploying Wireless Technologies (Wen)	Dallas, 1/07
Fault Detection and Diagnostics – But What About Correction (Katipamula)	Dallas, 1/07
Issues in “Real” Wireless Network Applications (Planned)	NYC, 1/08
Challenges and Lessons-Learned from Exchanging Data/Information Between EMCS and FDD Tools (Planned)	NYC, 1/08
FDD ---But What About Correction? (Planned)	TBD
Challenges and Lessons Learned From Showing Data From FDD (Planned)	TBD

TC Sponsored Forums (past 3 years, present, planned)

Title	Date (Given or Planned)
Achieving Market Acceptance of HVAC Fault Detection and Diagnostic Systems (Goetzler, co-sponsored with TC 7.4)	Orlando, 1/05
What the utility wants to do to your building and how you will benefit (Kintner-Meyer, TC 7.4 co-sponsor)	Denver, 6/05
Wireless Sensing and Control: Where is it Needed and What Should it Control? (Brambley, TC 1.4 co-sponsor)	Chicago, 1/06
Fault Detection and Diagnostics: Are You Ready to Put it in Your Building? (Brambley, TC 1.4 and 7.6 co-sponsor)	Dallas, 1/07
How Secure Is Your Wireless Control Network? (Planned)	TBD

TC Sponsored Public Sessions (past 3 years, present, planned): None

Journal Publications (past 3 years, present, planned):

Kintner-Meyer, M.; Goldman, C.; Sezgen, O.; Pratt, D. 2003 “Dividends with Demand Response”. ASHRAE Journal Feature article, October 2003 issue. P. 37-43. American Society of Heating, Refrigeration, and Air-conditioning Engineers, Inc., Atlanta, GA.

Kintner-Meyer, M; Brambley, M., 2002. Pros and Cons of Wireless in Buildings. ASHRAE Journal Feature article, November 2002 issue, p 54-61. American Society of Heating, Refrigeration, and Air-conditioning Engineers, Inc., Atlanta, GA. Obtainable at <http://www.ashraejournal.org/features/pdfs/November2002/kintnermeyer.pdf>

ASHRAE TC 7.5, Smart Building Systems

June 26, 2007

1. Call to Order, Roll Call, and Introductions (Lomonaco)

The meeting was called to order at 3:31 PM with Chairman Michael Brambley presiding and Carol Lomonaco as Secretary.

Everyone introduce themselves. The signup sheet for the General Meeting was passed around for everyone to sign.

Handed out the agenda for the main meeting.

Read the scope of TC7.5.

“TC 7.5 is concerned with the performance and interactions of smart building systems, the impact of smart systems on the total building performance, methods for achieving more intelligent control and operation of building processes, interactions of smart buildings with utilities, and documentation of the benefits of smart buildings and smart building systems as they relate to energy consumption, cost of operation, maintenance, occupant comfort, building commissioning, operations, and impact of the SBS on utilities and natural resources.”

Michael Brambley announced that Carol Lomonaco is now the Secretary because Michael Kintner-Meyer has to withdraw as secretary of TC 7.5 because of a new work assignment. TC 7.5 is trying to hold-paperless meetings. There is a FTP server to which everyone can connect, download the files to your computer, disconnect, and then refer to the files for the TC meeting from your computer. Mike Brambley told everyone the IP address.

Liaisons present: None present.

Janice Peterson – TAC Section 7 Head.

Voting 10 members present: Michael Brambley, Bob Old, Carol Lomonaco, Jin Wen, Peng Xu, Jim Braun, Bill Healy, James W. Gartner, Steve Blanc, Michael Brandemuehl

Voting members absent: Todd Rossi, Jonathan Wright

Michael Brambley explained that we have a wireless network connection for this meeting.

The wireless connection is for our paperless TC7.5 meeting.

All documents for the meeting may be downloaded. Michael Brambley requested that attendees only take the paper copies of the agenda and notes if they don't have access by computer for this meeting.

Mike Brambley asked if there are any Liaisons present. None at this time were present.

2. Approval of Minutes from Dallas

Michael Brambley distributed copies of the Dallas Meeting minutes.

Motion: Motion to defer the approval the Dallas minutes for 2 weeks by Bob Old and seconded by Peng Xu.

Discussion: None.

Comments: None.

Mike Brambley asked that everyone send their revisions to Carol.

Vote: chairman not voting. 8-0-0 (Approved). [Note: one of the voting members left the

room.]

3. Review of Action Items from Dallas Meeting (Brambley)

1. Michael Brambley was told to get a letter out concerning the change in the “free” registration policy for ASHRAE meeting session chairs as well as some of the speakers. Michael did not take the action (write the letter) because on the last day of the meeting (or just after the meeting) the ASHRAE Board of Directors (BOD) repealed that decision (i.e., decided to keep the policy as it was at least through the Long Beach ASHRAE meeting). Mike Brambley asked during the meeting if there were any comments. [There were no comments by anyone.]
2. Bob Old volunteered to review the CSI Master Format and provide comments to the TAC by February 28, 2007. (Michael Brambley asked everyone to send comments to Bob Old at the Dallas Meeting). There was no input from TC7.5 or his company, and Bob did not report to the TAC. The time to comment has passed (due in February 28, 2007).
3. FDD action item was related to Work Statement “Chiller Phase III” and Peng Xu had the action item to talk to TC8.2 to a list of defects on the Work Statement by March 2007. Peng Xu has completed it.
4. FDD action item (for Steve Blanc) related to RTAR (not Work Statement) to be drafted by Steve Blanc. Steve is to revise the RTAR such that the bidder is required to specify the methods to use by field test.
5. Natascha Castro’s web site report. Mike Brambley asked all sub committee chairs to provide content to the TC7.5 webmaster (Natascha). Material for posting may include draft minutes labeled as draft.

4. Announcements from TAC Section 7 Head – Janice Peterson

- No changes from the TC Chair breakfast session announcements
- Janice Peterson put a pitch in for TRG 7 “Tools for Sustainable Building Operations, Maintenance And Cost Analysis”. (Note: There are two TRG 7s: “Tools for Sustainable Building Operations, Maintenance And Cost Analysis” and “Underfloor Air Distribution”).
- Action Item for TRG 7 is to fill out a matrix of the available resources including standards, publications, training, different organizations that exist. The end result of TRG 7 committee work will be to make recommendations to ASHRAE (including research projects and publications).
- Anyone can email Janice or attend the September 8th, 2007 TRG 7 meeting in Chicago face-to-face.
- Anyone can join TRG-7
- TRG-7 holds conference calls once a month.
- Mike Brambley asked if any members (voting members and non-voting) were interested in serving on TRG-7. If not, Mike Brambley invited members in the room to join because a lot of what we do relates to Operations and Maintenance.
- TC7.5 was asked to co-sponsor a RTAR with TC1.4 with TRG-7

A few more attendees came in and were asked to introduce themselves, and sign the sign-in sheet.

Mike Brambley gave our IP address to those new attendees in the room for our paperless meetings.

5. TC 7.5 Chair's Report (Brambley)

-From our Program Liaison: it is important for all session chairs and speakers to upload program in advance for the New York City (NYC) program by the deadline (approx. 2 weeks before the meeting). If we don't have a 100% compliance, TC7.5 will not get a priority one in the Salt Lake City meeting. Michael Brambley is speaking about the Friday, June 15, 2007 (first) commercial check for the Long Beach meeting, and the Wednesday, January 9, 2008 deadline for the NYC program.

-There will be no opting out of recording your seminar starting in NYC. Some TCs will be asked to prepare sessions in advance for NYC PDHs credit. Michael Brambley asked Janice for clarification. We will get out the information out to session chairs.

-CTTC (Chapter Technology Transfer Committee) liaison reported two key messages. One the liaison stated that the committee is our conduit for getting information to chapters and the membership, so use it. The second message is that there is another satellite broadcast planned. Next year's broadcast is called "Integrated Building Design" and is scheduled for April 16, 2008. This year's (was very successful) April 2007 had 737 downlink locations and 17, 000 (participants) viewers. Mike Brambley passed the CTTC newsletter around.

6. Additional Announcements (Brambley)

-ASHRAE TC Committee Rosters are available on the ASHRAE website, they have been emailed out (and will be continued to be emailed out) to Chair, Vice Chair, Secretary and Section Head. The website where you can look at the roster for TC 7.5 is www.ashrae.org

-Thank you letters can be written to employers for allowing their employees to participate at ASHRAE. Mike Brambley circulated a list around during the meeting for those who would like a letter from the ASHRAE president to to their company to fill out with pertinent information. .

-ASHRAE headquarters renewal project, Mike Brambley just heard that ASHRAE BOD has approved the intent and the budget of \$5.5M (USD) to go ahead with the ASHRAE headquarters building renovation. Mike Brambley pointed out that the refurbished building will include an ASHRAE learning center. It will provide more space for onsite meetings and training. It is also expected to be a living laboratory. Mike Brambley encouraged everyone to begin thinking about research topics and RTARs that might use that living laboratory. The two (HVAC) systems that have been selected for use in this renovation for the 1st floor and the learning center is a dedicated outdoor air system (DOAS) with variable refrigerant flow units. The 2nd floor will use DOAS with ground source heat pumps. Note: they are using two different systems specifically to show two different technologies being used in the building. The Living laboratory concept focuses on enabling the renovated ASHRAE headquarters building to serve as more than a facility to house ASHRAE staff and be a visible example of sustainability. It will also support ASHRAE research as a rich resource of data on building system and equipment performance. It will be a demonstration of performance monitoring and provide limited space for real-world investigations of an operating building. Those capabilities will be available and we should be thinking how we can use it for our TC 7.5 research work. Data has been taken on the building before the renovation. Not sure if simulation is done. But a comparison will be made on the new renovated building. Also, the target for the design team is a gold LEED rating.

-Several new Technical Committees (TCs) have been formed. They are:

=TC2.9 "UVAS Ultraviolet (UV) Air and Surface Treatment"

=TG3.GVAC "HVAC Contractors and Design Build Firms"

=TRG4 "Sustainable Building Guidance & Metrics"

=TRG7 "Tools for Sustainable Building Operations, Maintenance and Cost Analysis"

=TRG7 "Underfloor Air Distribution"

=TG8.VRF "Variable Refrigerant Flow"

-There will be another (ASHRAE) handbook improvement workshop. There was a workshop on the 2006 Refrigeration volume in April 2007.

The findings from that workshop were:

1. Keeping the volume more current. (Six (6) recommendations)
2. Adding new information in new chapters. (Five (5) recommendations)
3. Improving guidance to author's revisers. (Two (2) recommendations)
4. Glossary [related to usability] plus revise chapter groups and title changes (Three (3) recommendations)

The complete report will be available on the Technical Committee page of the ASHRAE website after the Long Beach meeting.

-There will also be a workshop on the ASHRAE Applications 2007 volume in April 2008. The applications volume just came out and TC7.5's contribution FDD material is in Chapter 38 of the manual. Please contact Mike Vaughn at (e-mail removed) if you want to be involved in that workshop.

-New 2007-2010 Research Advisory Panel (RAP) appointed. They will be developing a research strategic plan for the ASHRAE society for the 2010-2015 time period. {Peng Xu, will make an ASHRAE research fund announcement during his Research subcommittee chair report.}

-TC website automation tool. TAC is working with a contractor on developing this. The idea is to eliminate the need (as much as possible) to use HTML. TAC hopes to display this tool at the NYC meeting.

-Nominations are being called for from the George D. Hightower Award. This is the TC/TG/TRG technical leadership and contribution awards. The nominations are due Sept. 1 2007 to our Section Head Janice Peterson.

-Updating peer reviews of the advanced energy design guides. There are two for which 90% complete technical refinement drafts are complete. The reviews are being held for K-12 schools July 9-20, 2007. The review of the design guide for warehouses will be held sometime in late summer or early fall. The other guide is the design guide for highway lodging. The publication date for the highway lodging design guide is TBD.

-There is a new webpage for advanced energy design guide and is now open. It is found at www.ashrae.org/aedg/

-There is a new action item for TC7.5's Secretary and Chair which is a request for Members First Newsletter content. We are to provide 25 word summary of TC7.5 activities that will be considered for publication in that new newsletter.

-TC7.5 was noted at the TC Chair Breakfast for Section 7 as the "best" TC website in Section 7. At the breakfast meeting, Janice asked us to do 3 things to our TC7.5 website. One is to put TC7.5's official scope on the website, Natascha will be contacted to do this.

-Srinivas reported that at the TC Chair Breakfast that members should update their "bio" data on the ASHRAE website. There is an email to send you the text copy of your "bio" to you because ASHRAE was not able to use the original bios when they changed computer systems. You still have to enter it in but you don't have to write it from the start but you can instead start with the old text copy that ASHRAE can send you.

-Now we will have the reports from each of the subcommittee.

Fault Detection and Diagnostics Subcommittee – Jin Wen-Long Beach-June 26, 2007.

The subcommittee meeting was on Sunday 3pm to 4pm. See Appendix C for the notes of that subcommittee meeting.

The first item discussed was a draft work statement, titled “Chiller Phase III – Fault Detection and Diagnostics for Centrifugal Chillers, Phase III: Real Time Implementation”. It has been submitted to RAC in May 2007. It has been conditionally approved and it has the potential for CEC co-funding.

RTAR-1429 “Fault Detection and Diagnostic Methods for Supermarkets” by John House. There are some issues on defining the scope of RTAR-1429. John suggested to move this RTAR to a lower priority. [There was no objection at the main meeting to move this RTAR to a lower priority.]

RTAR-Draft “A Building Systems Emulation Tool for Building Operators” by Steve Blanc. The output of this study is to help train the building operators. It will help develop a software tool. During FDD subcommittee meeting it was determined that the objectives need more clarification. It will be updated and it will be submitted to PUB.

Two new RTARs

- 1) FDD Simultaneous of Heating and Cooling. Simultaneous Heating and Cooling continues to be a problem for many large commercial buildings especially for buildings that are in a mild climate. The tasks for this RTAR include a) a stock analysis to understand the magnitude of this problem because of a long swing in seasons, b) to estimate the potential energy savings c) to develop a diagnosis method to detect the fault, and d) to develop tools for designers to avoid this problem. Peng Xu will revise and will be contacting TC1.4 and TC7.4 for co-sponsorship. John Seem, John House, and others will help.
- 2) Heating System FDD authored by Jin Wen. It was originally authored by Srinivas. Tasks include identification of faults such as leaking valves, stuck valves, coil fouling and coil blocking. Tasks include identifying existing and new FDD methods for the heating system, and to evaluate these methods through simulation and experimental studies. Jin Wen will complete RTAR for the NYC meeting. A rough copy (file) is on the server for everyone.

There was lots of discussion (led by Reinhard Seidl during our meeting) about a new RTAR that is being called the User Interface (UI) RTAR. Authored by Reinhard Seidl, the idea came as a result from a University of California Davis meeting on UI. Why isn't the UI for commercial Building Automation systems better designed and accepted for Building Operators? This RTAR will conduct interviews and determine what functionality or views to bring to the operator. What does he need to see and how does the operator like to see the output? Is a dashboard needed? Do we need a ASHRAE Standard for the UI? Do we need a guideline?

Lots of discussion on if the BACnet committee will take up this UI issue since BACnet already defines objects. Also, it was mentioned that TC7.6 has discussed this topic. Perhaps no RTAR is needed, but there is a question if it is defined yet. Is a guideline needed?

Is there a ASHRAE home? TC1.4 research voted to own the UI RTAR according to Chariti

Young. Co-sponsored by TC7.9 and maybe by others. There was a little confusion with this new UI RTAR and a data standard RTAR for UIs. The data standards RTAR is more concerned with how the database structure should be designed.

Mike Brambley wants the people also in TC7.5 to encourage ASHRAE to initiate a standards path if we are not going to get it in via the BACnet path. Reinhard Seidl said he will talk to the BACnet guys.

Motion: To have TC7.5 co-sponsor the UI (design for Building Operators) RTAR, moved by Peng Xu, and seconded by Steve Blanc.

Question: Is this the final form of UI (asked Bill Healy)? Or are you waiting for more input from other TCs. Reinhard said no.

Comments: Jim Braun had one concern the things listed in his draft copy are normally what a controls company would do (as part of the UI design with their product). This looks like a development project not a research project (from hearing our discussions today).

Reinhard commented that what we are seeing in the field and there is a disconnect from the controls and operators. The customer for this work is a controls UI is the operator. ASHRAE has a mandate to guide the operator and help them with the UI to make this more usable. Is the building working as it should?

Jim Braun asked what is the real research that will be done? What changes to the UI? Or changes to the graphics or the database for the specific job or customer need (CL)? Mike Brambley asked vote to support or to participate in the preparation of this proposed RTAR. Vote for the RTAR co-sponsorship.

Motion: “To have TC7.5 co-sponsor the UI (Design for Building Operators) RTAR”, moved by Peng Xu, and seconded by Steve Blanc.

Discussion: The building operators do not have a voice into what the UI should look like to make the UI more usable for the building operators, the real user of the system. There was a question on whether the controls company can not respond overnight but maybe if there was a ASHRAE guideline. Mike Brambley commented that details need to be worked on at the subcommittee level not at this TC7.5 main meeting. Peng thought we should still vote on this RTAR co-sponsorship and the motion above. Or was the goal of this UI (Design) RTAR to give the controls engineer (in the field) a guideline on how to engineer a job and to thereby give the building operators the key configuration of the system including the graphics they need to run the building effectively?

Vote: Motion passed 6 -1-3. Chair not voting. (Mike Brandemuehl was now in the room.)

Jin Wen will circulate a names list for those interesting working on the UI (Design for Building Operators) RTAR. She will give the names (and contact information) to Reinhard. Was the purpose of the UI RTAR to conduct a survey of the building operators to understand? What UI improvements are needed so they can do their job of operating the building more effectively?

There was not too much time to discuss the FDD Program was not discussed during FDD meeting on Sunday. Wen mentioned the Transactions Session “FDD Diagnostics” was held on Sunday (at Long Beach) on Sunday, June 24, 2007. The chair was John House. There are two potential seminars that WEN said that were still possible to pursue for our TC7.5 if people were still interested. One potential seminar is “FDD ---But What About Correction”? The potential seminar was brought up Srinivas at the Dallas meeting. Srinivas was still interested in this

seminar. If anyone is still interested send your email in helping with the seminar to get potential speakers for this seminar. The seminar on the subject of detecting faults but more importantly dealing with what to do with those faults. The second program discussed during the FDD subcommittee meeting was “Challenges and Lessons Learned From Showing Data From FDD”. There are a couple of people already signed up to be speakers. Wen will push to have this seminar for the Salt Lake City, Utah Program for TC7.5.

Chariti Young mentioned a similar program for TC 1.4. Wen will coordinate with Carol Lomonaco who is the Program Chair for TC7.5. Carol Lomonaco has been coordinating with the Program Chair from TC1.4 on all program content.

Wireless Applications Subcommittee – Bill Healy-June 26, 2007

Read scope of Wireless Applications. See Appendix D for the Wireless Applications Subcommittee held on Sunday, June 24, 2007.

Bill Healy discussed RTAR 1430: “Development of Metrics to Evaluate Benefits of Sensor Networks in Buildings”. This RTAR was originally approved by the TC in Denver (June 2005) and returned by RAC with comments in November 2005. Bill has made the revisions to the RTAR in response to the comments. The RTAR was re-sent to RAC before the May 15th deadline and there is no update on this RTAR. There is no further action needed on this RTAR at this time.

Bill Healy discussed another research idea (a potential RTAR) by Bold Old titled “Locating and Identifying IEEE 802.15.4 RF Network Devices” was withdrawn because there was no clear benefit to ASHRAE. During the subcommittee meeting there was a lot of discussion on what role does the wireless applications subcommittee and TC7.5 have for building engineers. A lot of the issues with wireless were felt to be out of TC7.5’s realm. But there was a general feeling that is definitely a role for us to assist ASHRAE members in the use of wireless. After that discussion a new ideal for a RTAR was proposed and it is still untitled. But the basic gist of it (the RTAR) is to develop a guideline for the use of wireless in buildings. There is nothing written up yet for this RTAR but Bill Healy will head this RTAR up. Bill has already some reviewers for this RTAR and they are Jin Wen, Mike Brambley and Bob Olds.

Bill Healy discussed another idea for a research topic was “Control Network Faulty Behavior”. No RTAR was written yet. It was withdrawn by the composer. No one is the lead on it. The proposed idea had to do with the reliability of wireless technologies and how it impacts control networks. The original composer/leader was Cliff Federspiel.

No action is needed on the research topics.

Bill discussed possible Program ideas. Bill mentioned that a Forum that was previously submitted for Long Beach was titled “Wireless Control Network Reliability and Stability” was not accepted for the Long Beach meeting. It was our priority number selection for Long Beach but did not get accepted. Cliff was the chair of that Forum and wants to resubmit the program for NYC. But the title will be changed to tie more in with the theme for the NYC meeting. Someone suggested “High-rise Networks” as a possible title for that Forum since the meeting will be in NYC.

The other program for NYC will be a seminar titled “Wireless BAS Systems”. Carol Lomonaco is the chairperson for that Seminar. The seminar will examine whether these systems really exist, or whether the type should not be believed. Carol has three speakers lined up for this seminar.

The last thing Bill mentioned about how can put something on wireless into the ASHRAE Handbook. Because currently we do not have anything specifically in the Handbook on Wireless. The idea was to put information in another (existing) chapter like we did for FDD. Bill has gone through the Handbook once to try and identify places where we may be able to put some wireless information. Bill mentioned that one potential area would be the area of computer applications. We will do a survey on where wireless might fit into the handbook (Mike Brambley, John House, and Bob Old). Ch 15 Fundamentals (mentioned by Chariti) under review by TC 1.4 and there is a section on control methods. TC 1.4 is looking for

reviewers and contributors. TC1.4 is looking to have the draft of the revised CH 15 for the NYC meeting.

Action Item: Bill Healy to contact TC1.4 about Ch 15 Fundamentals (for 2009).
Also, anyone can look through the Handbook and share your feedback with Bill Healy.

Building/Utility Interface Subcommittee – Rich Hackner

Rich read the scope. See Appendix E.

Two particular areas for RTARs were discussed and they were residential and commercial applications.

Rich reported Jin Wen's draft RTAR titled "Status and Benefits of Demand Response Programs for Residential Buildings". She will refine the first draft, and will re-draft for NYC. Carlos Haiad, Chris Scruton, and Jim Braun will work with Jin on this RTAR.

For the commercial applications, a RTAR was put together titled "Demand Response Optimization Protocol". At the Dallas meeting the draft RTAR was given to our section head Patrick Hughes. Patrick gave Rich the comments and Rich has taken the RTAR as far as he can. Rich invited everyone to take a look at this new RTAR. It has to be done before August 15, 2007 for the next evaluation cycle. Or before December 15, 2007 or March 15, 2008---the next evaluation cycles. Phase I of this RTAR is to establish the criteria for the protocol design. It will take a lot of the tools of this committee and others, and to package it in a way to see how much demand reduction is available. What kind of benefit could they expect? It is along the tech transfer lines.

Rich has asked for a vote or an email vote...before August 15, 2007, December 15, 2007 and March 15, 2008.

Peng is circulating RTAR now in the meeting. It is not on the server, it is on a second thumb-drive that is being circulating around the room. It is file 625 version 3 and it has been modified. We will re-visit this RTAR later in this meeting during Peng's report. It is important for the all of the present voting TC7.5 members to review this RTAR. We will take a vote later in this TC meeting.

Program ideas. We discussed one idea for a seminar or a forum on third-party Aggregators for a future ASHRAE maybe for Salt Lake City. The seminar is on the topic of interfacing with customers and the utilities. One other program suggestion mentioned by Carol Lomonaco was the meter seminar. Carlos Haiad would be the chair.

An Action Item for Rich will be to review the Handbook to see if there are any areas for Building Utility Interface information to be added in (similar to what Bill Healy has done). If anyone is interested in helping contact Rich.

Research Subcommittee – Peng Xu

See Appendix F.

Announcements: ASHRAE is encouraging people to write more RTARs and Work Statements.

ASHRAE is seriously trying to address the top three issues from the survey. They are: a lack of time, conflict of interest, and frustration with RTAR's review. First on the subject of the conflict of interest, ASHRAE will relax the policy a little bit. The writer can bid on the project and that there is no budget constraint anymore (in the new proposed "conflict of interest"). Also, ASHRAE will add a new step in the review process "to do a conditional approval of the Work Statement" iff there are only minor changes so people can bid.

The current ASHRAE approval rate for Work Statement is 82% and for RTARs it is 72%. ASHRAE is looking for candidates for ASHRAE Service Research Award...see Peng after this meeting.

The long term ASHRAE research direction long term goal is to provide wide research that relates to net zero energy building design. There are three areas that have the highest priority that are high lighted and has 1) Building Envelope 2) Design Tools for Better Architectural Design and Simulation Programs 3) Small Load/Part Load/Miscellaneous Load. In regards to the building envelope they have active/dynamic advanced facade...day lighting control and (building) envelope air tightness to name a few.

Email any comments on the ASHRAE's research direction (i.e., the 30 page document) to Mike Brambley. Action Item: Carol and Mike will find a way to mail it out to TC7.5's distribution list.

Current Research Reports:

1275-RP: Field Performance Assessment of Package Equipment to Quantify Benefits of Proper Service

(Todd Rossi, PMSC Chair). Todd Rossi was unable to attend the meeting, but the meeting of the PMS for 1274-RP with the contractor was held Sunday evening. No cost extension until April, 2008 was approved and voted on at our Dallas meeting. The contractor will use a new protocol and test another 200 units.

Did we submit to Mike Vaughn or to Research Liaison?

Action Item: Peng to submit an extension to our Research Liaison – Patrick Hughes.

PMSC asked for the monthly update. No progress report since Jan. 2007

Keith Temple said that the meeting went well and the members of the team addressed the issues. But, there is no monthly report/update since Jan. 2007 according to our Dallas meeting minutes. Steve Blanc reported that Dan was rather perplexed upon hearing that the reports weren't done and Dan was to get back to the Peng.

Action Item: Peng to follow-up on the required monthly reports for 1275-RP.

1312-RP: Tools for Evaluating FDD Methods for AHUs.

Phil Haves is the PMS chair. Phil reported that the project started 9/2005 and it is expected to end on 8/31/2007. A no-cost extension will be required. HAVC Sim-plus model was developed. In the last six months, they have made extensive efforts on pressure measurements. Progress is generally good. Work is started on fault modeling.

Motion: To approve 12 month no cost extension, new end date is 8/31/2008. Motion: Jim Braun; Seconded: Steve Blanc.

Discussion: Bill Healy asked why for this extension? Need more time.

Vote: Motion passed, 9-0-0; chair not voting.

1275-RP: Evaluation and Assessment of Fault Detection and Diagnostic Methods for Centrifugal Chillers—Phase II

(Phil Haves, PMSC Chair). Phil was not able to attend the Research Subcommittee meeting and Srinivas Katipamula reported on his behalf. This project is completed.

Action Item: PMS needs to fill the close out project. Peng will check with Phil Haves.

Two RTARs to Vote on

1) Steve Blanc's RTAR.

Motion: To approve RTAR Building System Emulator for Building Operators" submission to RAC by TC7.5. Subject to minor changes to the definition of feasibility.

Moved: Peng; Seconded: Bill Healy.

Discussion: Jim Braun asked if this going to create a specification for an emulator?

What is the feasibility? Steve said it is ok and something what we needed to do.

Vote: Motion approved, 9-0-0; chair not voting.

Phil Haves commented on what he is currently doing with DOE funding.

It was asked if he should double the budget to build the functional specification and maybe an emulator.

2) Rich Hackner's RTAR.

Motion: Vote to approve "Demand Response Optimization Protocol and Integrated Training RTAR" and submit this RTAR to RAC with minor changes to define protocol.

Moved by Peng; Seconded by: Jin Wen.

Discussion: Mike Brambley asked why is the Research Classification not filled out?

(There were a couple of items highlighted and one item not filled out.) Rich said that he corrected it too. Jim Braun suggested to define what you mean by the protocol. Is it a guideline for how you link to a new application? It is vague. A couple sentences just to illustrate what is meant by protocol. Mike Brandemuehl mentioned that the California Energy Commission (CEC) might be interested in co-funding this. Rich said he would list that there is possible co-funding. CEC has expressed an interest.

Vote: Motion passed, 9-0-0; chair not voting.

Rich asked what should we put in for the TC/TG priority. Jim Braun said in the meeting said it is only needed if you want to. Peng said right now it is priority 2.

Research Plan...see the "Post" Long Beach file passed around during the meeting.

Mike Brambley asked if we still needed a long range research plan. John House said that a long range Research Plan is no longer needed to be submitted. But we should still

plan our research as a TC.

Peng said that he as sent around a Research Plan “post” Long Beach Research Plan (doc file) list. Only 15 of the listed projects and only the first four projects are prioritized. We will have one project up for bid in Oct. 2007. In addition, we will have two approved RTARs and this time we have presented two new RTARs. We have another seven draft (RTARs) new research ideas that people in TC7.5 are working on. Peng said we are in good shape on the research plan.

Let Peng know if you have anyone has any questions on the current status of the research projects listed in the Research Plan.

Jim Wen said the date was wrong on his Research Plan. Peng will correct it.

He read the list from his file...Research Plan.

(Priority 1=highest)

Priority =1, Chiller Diagnosis Phase III

Priority =2, “Demand Response Optimization Protocol and Integrated Training RTAR”

Priority =3, Development of Metrics to Evaluate Sensors Networks in Buildings.

Priority =4, What is Emulation to the training and strategy on Building Operations.

(There were no comments on the long term research plan for TC7.5.)

We discussed the long term research ideas in the subcommittee mtg. Peng read the whole list (see Appendix F of this report).

Peng and Mike Brambley encouraged others in the meeting to send in long term plans and any new ideas.

Mike Brandemuehl announced that the author can not bid on the work statement.

Program Subcommittee – Program Chair: Carol Lomonaco

See Appendix G for TC 7.5 Program Notes-rev1.

John House was asked to report on the Transactions session on Sunday. We had three speakers and about 40 people attended. There were interesting papers. The topic was specialized.

Carol Lomonaco led the discussion of program topics for the upcoming meetings. The following programs were proposed as the prioritized program plan for NYC.

Motion: To approve our TC7.5:

Priority=1 program for submittal for NYC as “Issues in “Real in Real Wireless Network Applications” (Seminar, Lomonaco is the chair),

Priority=2 Challenges and the Lessons Learned from Sharing Data from FDD Applications (Seminar, Wen is the chair),

Priority=3 “So Why Settle for Faulty Behavior on Wireless Control Networks” (Forum, Federspiel) for NYC.

Motion: Moved by: Bill Healy, Seconded by: Jim Braun

Discussion: Discussion was centered on the title for “Challenges and the Lessons Learned from Sharing Data from FDD Applications”. Several members of TC7.5 that we will accept a few minor changes to the title of the seminar that Jin Wen will submit and chair for NYC.

Vote: Motion approved, 9-0-0; chair not voting.

Steve Blanc had a question on the one program idea connected with utility companies and consumers.

Handbook Report – John House

John House commented on Les' work on revising FDD Applications Handbook is in Chapter 38 for the 2007 Applications. Contributions by TC 7.3 will be recognized.

John said that TC7.5 needs to think about what other topics we need to modify or add to the handbooks.

We will stick with the model that TC7.5 took with FDD which was to seek out where our material might best integrate with existing chapters. Then approach those responsible for the chapters and ask if they are receptive to us providing material.

Action Item: Dedicated meeting for TC7.5 Handbook 0.5 hr meeting immediately before the main TC7.5 meeting for NYC meeting.

A question was asked where is the list of which handbook is going through revision and which year. It was mentioned that we can find that information on the ASHRAE website. Continue to think about material to add to handbook feed it to John House for TC7.5.

Mike Brambley mentioned about TC7.3 CD+ on FDD review. The handbook of TC7.3 asked everyone to review that handbook and let them know if there are any comments.

Web – Natascha Castro (Mike Gawre reporting for Natascha)

The format of the TC7.5 website is improved and is matching the style of other TCs. It received kudos for it being the best website in Section 7. The meeting minutes should be posted within 60 days for posting on the website. Subcommittee chairs are requested to select material and content for posting on the website also.

Homeland Security

Jim Gartner TC7.3 is proposing a seminar on homeland security for Salt Lake City.

Old Business

Nothing to report.

New Business

1. Roster changes for the end of June 2007, Mike Brandemuehl, Jim Braun, and Jim Gartner will be rolling off the list as "voting" members on TC7.5.
2. Vern Smith, Rich Hackner, Haorong Li, and Jonathan Wright as our International Member as voting TC7.5 members. (Note: Each TC can have two international voting members.) Because other international candidates could not make the commitment---Mike Brambley checked if Jonathan Wright could serve another term and ASHRAE said yes. You can have two international members so if anyone knows any other international members who will be interested (and have participated in TC7.5)in serving three years from now let Mike Brambley know.
3. Mike Brambley asked if anyone is interested in being a TC7.5 Corresponding Member (CM) or Voting Member (VM) to send an email before NYC, we would like to talk to candidates before NYC.

Adjourn

Motion: Move to adjourn by Jim Gartner seconded by Steve Blanc. 6:05pm.

Appendices

- A. Call to Meeting and Agenda
- B. Scope and Organization
- C. Fault Detection and Diagnostics Subcommittee Meeting
- D. Wireless Applications Subcommittee Meeting
- E. Building Utility Interface Subcommittee Meeting
- F. Research Subcommittee Meeting
- G. Program Notes
- H. 1274-RP PMSC Notes
- I. 1275-RP PMSC Notes
- J. 1312-RP PMSC Notes
- K. List of Subcommittee and Committee Attendees
- L. Contact List

Appendix A.

TC 7.5 Call to Meeting and Agenda

ASHRAE American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.

1791 Tullie Circle, NE, Atlanta, Georgia 30329-2305

404-636-8400 | Fax 404-321-5478

Reply to: Mike Brambley
K5-16, PO Box 999
Pacific Northwest National
Laboratory
Richland, WA 99352

June 13, 2007

Dear TC 7.5 Member, International Member, or Corresponding Member:

The **TC** on Smart Building Systems will meet in Long Beach, CA according to the following schedule:

TC 7.5	Smart Building Systems	Tuesday	3:30-6:00p	Hyatt/Shoreline A (1)
TC 7.5	Fault Detection & Diagnosis	Sunday	3:00-4:00p	LBCC/102C (1)
TC 7.5	Wireless Applications	Sunday	4:00-5:00p	LBCC/102C
TC 7.5	Building/Utility Interface	Sunday	5:00-6:00p	LBCC/102C
TC 7.5	Research	Monday	2:00-3:00p	LBCC/103A
TC 7.5	1312-RP PM	Tuesday	8:00-9:30a	Hyatt/Pacific (1)
TC 7.5	1274-RP PM	Saturday	4:00-6:00p	TBD

TC 7.5 is sponsoring the following program sessions:

Transactions Session 2. Automated Fault Detection and Diagnostics (FDD)

Sunday, June 24, 2007, 11 a.m. to 12:30 p.m., Room 101A

Chair: John House

Poster Session. Formulation of Generic Methodology for Assessing FDD Methods and Its Specific Adoption to Large Chillers (RP-1275) (LB-07-036)

Tuesday, June 26, 2007, 11 a.m. to 1:00 p. m., Room 202AB

Author: T. Agami Reddy

Attached is a draft agenda for the full TC 7.5 committee meeting. I look forward to seeing you in Long Beach.

Mike Brambley
Chair, TC 7.5

**ASHRAE TC 7.5, Smart Building Systems
2007 Annual Meeting
Long Beach, CA**

AGENDA

Location: Hyatt/Shoreline A (1)
Date: Tuesday, June 26, 2007
Time: 3:30 - 6:00 p.m.

1. Roll Call and Introductions
2. TC 7.5 Scope
TC 7.5 is concerned with the performance and interactions of smart building systems, the impact of smart systems on the total building performance, methods for achieving more intelligent control and operation of building processes, interactions of smart buildings with utilities, and documentation of the benefits of smart buildings and smart building systems as they relate to energy consumption, cost of operation, maintenance, occupant comfort, building commissioning, operations, and impact of the SBS on utilities and natural resources.
3. Approval of Dallas Minutes
4. Announcements
5. Fault Detection and Diagnosis Subcommittee (Jin Wen)
6. Wireless Applications Subcommittee (Bill Healy)
7. Building/Utility Interface Subcommittee (Rich Hackner)
8. Research (Peng Xu)
 - Report on 1274-RP "Field Performance Assessment of Package Equipment to Quantify the Benefits of Proper Service" (Todd Rossi – PMSC Chair)
 - Report on 1312-RP "Tools for Evaluating Fault Detection and Diagnostic Methods for Air-Handling Units" (Phil Haves – PMSC Chair)
9. Program (Carol Lomonaco)
 - Proposed Plan for New York
10. Handbook (John House)
11. Web page (Natascha Castro)
12. Homeland Security
13. Old Business
14. New Business
 - Roster changes for 2007-2008
 - Other New Business
15. Adjournment

Appendix B.

TC 7.5, Smart Building Systems Scope and Organization **Revised July 1, 2001**

Overall Committee Scope

The Technical Committee on Smart Building Systems (SBS), TC 7.5, is concerned with the development and evaluation of technologies that could enable the widespread application of smart building systems. “Smart” buildings should take advantage of automation, communications, and data analysis technologies in order to operate in the most cost-effective manner. This implies integration of building services such as HVAC, fire, security, and transportation; the automation of many of the operation and maintenance functions traditionally performed by humans; and the interaction with outside service providers such as utilities, energy providers, and aggregators. Currently, three subcommittees form the backbone of the TC’s activities: fault detection and diagnostics, wireless applications, and building/utility interface.

Appendix C.

TC 7.5 Fault Detection and Diagnostics Subcommittee Meeting

Long Beach, CA: Sunday, June 24, 2007, 3:00-4:00pm

A. Ongoing Research Projects

Jin Wen (Chair) began the meeting with a review of the meeting agenda and presented the list of ongoing research projects:

1. 1274 RP, "Field Performance Assessment of Packaged Equipment to Quantify the Benefits of Proper Service." [PMSC Chair: Todd Rossi]
2. 1312 RP, "Tools for Evaluation FDD for AHUs" [PMSC Chair, Phil Haves]

B. Submitted Work Statement

Srinivas Katipamula indicated that the work statement "2005-75: **WS Chiller Phase III – Fault Detection and Diagnostics for Centrifugal Chillers, Phase III: Real Time Implementation.**" has been submitted to RAC in May 2007.

C. Draft RTAR and Work Statement

The following draft RTARs were discussed:

1. 1429-"**Fault Detection and Diagnostic Methods for Supermarkets**" [RTAR Champion: John House]
 - a. Status of this RTAR: RTAR approved. WS is due by August 15, 2007.
 - b. John encountered difficulty to define the scope of this RTAR, i.e., whether this RTAR should focus on refrigeration or whole building;
 - c. John has solicited opinions about this RTAR with TC 10.7;
 - d. It is proposed that this RTAR to be moved to a lower priority;
 - e. It is suggested to provide a position statement to RAC to report the status and problems for this RTAR.
2. "**A Building Systems Emulation Tool for Building Operators**" [RTAR Champion: Steve Blanc]
 - a. Background: a "what-if emulator for buildings" that helps training, operation, and FDD- connected to the real building operation system. Not a proof of concept, but how to develop something that can be turned into a tool- a high-order specification. Only software development in this project.
 - b. Objectives for this RTAR should be clearer: whether it is a tool or specifications.
 - c. A revised RTAR was prepared for main Research Committee discussion.
3. New RTAR: "**Simultaneous Heating and Cooling**" [RTAR Champion: Peng Xu]
 - a. Background: Simultaneous heating and cooling in large commercial buildings is a serious problem particularly in mild climate area, because of long swing seasons. Tasks for this RTAR include: a) A stock analysis to understand the magnitude of the problems and estimate potential savings; b) Develop a diagnosis method to detect the fault; and c) Develop tools for designers to avoid this problem.
 - b. It is proposed that this RTAR should focus on identifying causes and solutions for such faults instead of just detecting the faults;
 - c. TC 1.4 and 7.4 should be sought to be co-sponsors;
 - d. John Seem volunteered to help developing the RTAR and Mike Brambley volunteered to review the RTAR.

4. New RTAR: "Heating System FDD" [RTAR Champion: Jin Wen]
 - a. Background: Faults, such as leaking and stuck valves, coil fouling, and pipe blocking, exist in heating system. Yet very few studies exist which study the detection and diagnosis methods for heating system. Tasks for this RTAR include identifying existing and new FDD methods for heating system; evaluate these methods through simulation and experimental studies.
 - b. A completed RTAR will be prepared for NYC meeting. John Seem and Daniel Choiniere volunteered to help.

D. New Research Ideas

A proposal for a new data standard that streamlines data storage in EMCS systems was discussed.

- A name list is sought for continuous discussion after this meeting.
- It is proposed to have further discussion to identify whether we need to push ASHRAE to generate a GPC.
- The output of this project will be used for design engineers to specify the control specification. Discussion was held about who will benefit from this RTAR and what should be specified: user interface structure or how information is presented.
- TC 1.4 will be the home TC for this RTAR. We need to vote for whether to co-sponsor this RTAR.

E. Programs

1. Transactions (Automated Fault Detection and Diagnosis) chaired by John House was held in this meeting;
2. Future Seminar Idea: *Challenges and Lessons-Learned from Exchanging Data/Information Between EMCS and FDD Tools*
 - ❖ Potential Speakers: Srinivas Katipamula (PNNL); Bob Old(Siemens); Peng Xu (LBNL); Bill Healy (NIST).
 - ❖ TC1.4 has two similar seminars planned for Salt Lake City: *The Benefit of Using Data from your DDC System* (Mike Pouchak); and *How to get Data from your DDC System via the Web, XML, BACnet, or oBIX* (Chariti Young).
 - ❖ This seminar is planned for NYC meeting.
3. Future Seminar idea: *FDD...Fault Detection and Diagnostics...but What about "Correction?"*
 - ❖ Brought up by Srinivas Katipamula in Dallas meeting.
 - ❖ This seminar is planned for Salt Lake City meeting.
 - ❖ Shengwei Wang (Hong Kong Poly Tech) and Phil Haves volunteered to help.

Appendix D.

TC 7.5 Wireless Applications Subcommittee

2007 ASHRAE Summer Meeting, Long Beach

June 24, 2007

Meeting began at 4:15 pm

The scope of the committee was read:

The Wireless Applications Subcommittee of TC 7.5: Smart Building Systems explores the use of wireless communications technology for enabling smart building systems. The aim of this subcommittee will be (a) to sponsor research to understand the performance, benefits, and drawbacks of wireless communications in buildings and to enhance the impact of wireless technology in building operations, and (b) to organize programs that inform ASHRAE members of advances in wireless technology and that provide those members with experiences and guidelines in using wireless technology for building applications.

Research

RTAR 1430: Development of metrics to evaluate benefits of sensor networks in buildings. The RTAR was resubmitted to RAC several months ago. No other update at this point.

Proposed RTAR "Locating and Identifying IEEE 802.15.4 RF Network Devices. Bob Old has chosen to withdraw this idea. We cannot identify a clear benefit to ASHRAE members for this work. Discussion ensued on the need for guidance to ASHRAE members regarding how and when to use wireless technologies. With the emergence of low-cost sensing, alternative wireless technologies, and innovative sensor systems, great value could be provided to ASHRAE members for written guidance on use of these technologies. It was proposed to either write a journal paper giving such guidance or develop a research project that would develop this guidance. Jim Braun indicated that the TC could write an RTAR to develop such a guideline. Jim provided Bill Healy a copy of a Work Statement that was written to develop such a guideline. Bill will write a draft RTAR to create a work statement on the use of wireless in building applications. Bob Old, Mike Brambley, and Jin Wen volunteered to review the RTAR.

Research Idea: Control Network Faulty Behavior. This idea was originally proposed by Cliff Federspiel and aimed to determine the impacts of transmission losses by wireless control networks on the performance of systems. Cliff will not have time to work on this topic. No one was interested in picking up this idea.

Program

The forum that was placed as the first priority for the Long Beach Meeting entitled "Wireless Control Network Reliability and Stability" was not accepted for the Long Beach meeting. Cliff Federspiel, the chair of that forum, wants to resubmit the program for New York.

It was indicated that a potential reason for this program not being accepted for Long Beach was that it did not fit the theme of the meeting. Future programs should attempt to tie into the theme of the meeting. For New York, the theme will be “Reaching New Heights in Net Zero-Energy Design.”

An additional recommendation is to modify the title to make the forum more provocative in soliciting input from ASHRAE members. In particular, what are we trying to learn from this forum? The title needs to zero in on the problem, for example, “Are wireless sensors and controls reliable enough?”

Seminar idea: Characterization of Wireless BAS Systems. Proposed by Carol Lomonaco. Question was raised as to whether the proposed topic is too narrow. Perhaps broaden to “Wireless BAS Systems: An Update” or something to that effect. The seminar could examine whether these systems really exist, or whether the hype should not be believed. Carol has one volunteer. Pornsak Songkakul and Carlos Haiad can each find speakers for this seminar.

New Business

Handbook: Mike Brambley suggested that we consider where the TC can contribute information on Wireless Applications to the handbook. Our contributions could follow the model used in incorporating FDD material into the handbook, namely by working with an existing chapter to add to their material. Bill Healy examined the chapters in the recent Applications Handbook under the Buildings and Operations and Management. Best options appear to be in Chapter 38: Computer Applications. A group consisting of Mike Brambley, Bob Old, and John House was formed to examine the handbook and identify the potential chapters in which TC 7.5 could contribute material. John House recommended that we create bullet points in the process that would identify the material that would be incorporated.

Meeting adjourned at 5:05 pm

Appendix E.

TC 7.5 Building/Utility Interface Subcommittee Meeting

2007 ASHRAE Summer Meeting, Long Beach – June 24th, 2007

The meeting began at 5:00 p.m. with about 15 people in attendance. Please refer to the main TC committee minutes for attendance list.

Rich Hackner, the sub-committee chair, began the meeting. The objectives of the sub-committee are:

This new subcommittee will explore and develop ideas and research work statements to improve the building and utility interactions (and more specifically the electric grid). The research will focus on developing enabling technologies for seamless interaction of smart building components and utilities and other building services. An important aspect of this work is to identify the information that is necessary to support smart building technologies, and to identify the requirements of communication protocols to support the exchange of this information between different building services, between buildings and utilities, between multiple buildings, with outside service providers.

The importance of a stable and reliable electric power grid to life and the economy in the 21st century has been underscored by two major events over the last decade: a major black out on the east coast of North America and wildly varying electricity prices in California during an attempt at restructuring the electricity marketplace. In response to these events many organization (DOE, EPRI, and CEC) have started research activities to find ways to modernize the grid. However, there are significant gaps in the research activities, especially as they relate to buildings. Since buildings consume over 70% of the electric in the U.S., they have to part of the solution to modernize the grid. ASHRAE has traditionally developed technologies, standards, and guidelines for buildings. Therefore, this subcommittee can play a major role in continuing this effort.

RTAR Development

Jin Wen presented a second draft of an RTAR entitled “Status and benefits of demand response programs for residential buildings.” Jin led a discussion on the expansion/introduction of automated meter reading and “Smart Thermostats” that are being deployed by many utilities. Jin is looking for comments on the RTAR between now and the next meeting. Chris Scruton, Jim Braun and Carlos Haiad offered to work with Jin to review the RTAR and provide comments.

Rich Hackner introduced a second draft on an RTAR entitled “Demand Response Optimization Protocol and Integrated Training. The objectives of the project would be to document the wealth of ASHRAE and other research that has considered individual demand response and demand control optimization strategies. And to develop a protocol for building owners/operators to “calibrate” their building to determine the steps that they should take to minimize their energy and demand costs within their

building. Rich had received comments from Patrick Hughes, Section 7 Research Liaison, and incorporated his comments in the latest version. Rich is seeking any additional comments before presenting at the Main TC 7.5 meeting. Chris Scruton indicated that CPUC may be interested in co-funding this work.

Program Ideas

Rich will check with Comverge and Enernoc to see if they might be interested in presenting during a future ASHRAE meeting (perhaps Salt Lake City?) on their work in aggregating customers for load control. He will report back at the next meeting

Handbook Review

Rich will review the handbook series for areas that may be appropriate to add sections/ provide review that are applicable to the Building-Utility Interface subcommittee. He will report his findings at the next meeting.

Meeting adjourned at 6:00 pm.

Appendix F.

TC 7.5 Research Subcommittee Meeting Monday, June 25, 2007, 2:00 – 3:00 p.m. 2007 Long Beach Minutes

The meeting convened at approximately 2:00 p.m. chaired by Peng Xu.

1. The first order of business was to review the agenda and revise if necessary. Copies of the agenda were distributed, after which Mike asked if there were any proposals for revisions. Mike wants to add a strategic research plan at the end. Reinhard Seidl wants to discuss his new research idea of control user interface.
2. Announcements: The second order of business was announcements. Peng asked Research Subcommittee to review the updated reports for the various topical subcommittees on their research and then for the Research Subcommittee chair to provide a summary report on the status of research at the full committee meeting.

Peng made announcements on the news from the research chair breakfast. ASHRAE needs new RTAR and Work Statements (WS). The funds are there. New research should focus on zero net energy building.

3. Reinhard Seidl: Control user interface. Seeking co-sponsorship from this TC. Carol made the following comments: 1) people do not care, 2) they do not know what they want. 3) what they want is over all the place, it is hard to define something fitting with everyone's need. Michael made comments that key indicators are not embodied in the system.
4. PMSC Reports on Research Projects: The third order of business was review of the status of the ongoing research projects, reports of which follow.
 - a. 1274-RP: Field Performance Assessment of Package Equipment to Quantify Benefits of Proper Service (Todd Rossi, PMSC Chair). Todd Rossi was unable to attend the meeting, but the meeting of the PMS for 1274-RP with the contractor was held Sunday evening.

- b. No cost extension until April, 2008. The contractor will use a new protocol and test 204 units. PMSC ask for the monthly update. No progress report since Jan. 2007

Action: Peng will check with Hughs on the no cost extension.

- c. 1275-RP: Evaluation and Assessment of Fault Detection and Diagnostic Methods for Centrifugal Chillers—Phase II (Phil Haves, PMSC Chair). Phil was not able to attend the Research Subcommittee meeting and Srinivas Katipamula reported on his behalf.

This project is completed.

Action: PMS need to fill the close out form. Peng will check with Phil Haves

- d. 1312-RP: Tools for Evaluating FDD Methods for AHUs. Srinivas Katipamula reported on this project. Drexel University is the contractor. Phil Haves is the PMS chair.

The status of the project as of 7 to 8 months ago was as follows. The contractor was putting together a simulation environment for evaluating FDD. They plan to use the dynamic cooling coil model from TC 7.4 project in the environment. The simulation environment is essentially complete except for debugging a few new modules. After debugging, they will then integrate the cooling coil model.

The contractor has completed the fault free model and is in the process of validating the model with experiment data from Iowa Energy Center. The contractor asked for a no cost extension either by six month or by one year. To be decided in PMS meeting.

5. The fourth order of business was to briefly review the key RTAR and work statement by the topical subcommittees. RTAR to be voted in the general meeting on Tuesday as follows.
- i. Rich Hackner. Demand response optimization protocol and integrated training.
 - ii. A Building Systems Emulation Tool for Building Operators
 - iii. Co-sponsorship, Reinhard Seidl, "User Interface Design for Improved System Operation"

6. New Business

Mike led a discussion on the future research directions. What are the needed researches in the area of smart building systems?

External data gathering. Internal data, user interface, how to get data in and out

Security of data exchange.

Smart building with lots of sensors and how to use these sensors.

What are the critical sensors missing today?

Plug and play HVAC control framework.

System can find the drift sensor and do the automated calibration.

Two way communications of HVAC components

Uncertainty propagation.

How can automated systems to operator's override?

Personal action to their thermal environment

Smart building on residential application

Get all the information together and do something useful for it.

System using real time simulation

System with real time utility data displayed to the occupants.

Example of what is smart building . Many buildings meet LEED standard in design but use lots of energy in real operation. Performance tracking.

7. Adjourned at 3:00 pm.

Appendix G.

TC 7.5 Program Notes

Program Chair: Carol Lomonaco
ASHRAE Annual Mtg June 23-27, 2007
Long Beach, CA

Long Beach TC 7.5 Program

Transactions Session 2. Automated Fault Detection and Diagnostics (FDD)
Sunday, June 24, 2007 11:00am – 12:30pm

Other Ideas for New York City, Salt Lake City, and Beyond Forum

So Why Settle for Faulty Behavior on Control Networks?
Cliff Federspiel, New York City

Seminar

Issues in “Real” Wireless Network Applications
Carol Lomonaco, New York City

Seminar

What’s “Real” And What’s “Hype” in Wireless Control Networks?
Lead: Mike Brambley, Salt Lake City

Seminar

Understanding Your Electric Utility’s Meter Mumbo Jumbo Programs
Lead: Carlos Haiad, Salt Lake City

Forum

Aggregators Panel
Lead: ??, Salt Lake City

Appendix H.

1274-RP PMSC Notes Sunday, June 24, 2007, Long Beach PMSC meeting minutes

1274-RP: “Field Performance Assessment of Package Equipment to Quantify Benefits of Proper Service”.

1274-RP Status: see Appendix F, 4a

Contractor:

Taghi Alezera – ADM Associates
Dan Mort – ADM Associates

PMS Members Present:

Steve Blanc – PG&E
Michael Brambley - PNNL
Ken Peet – LSE Engineering
Keith Temple - FDSI

Guests Present: none

PMS Members Absent:

Todd Rossi – PMS Chair
Chris Scruton - CEC
Jim Braun – Purdue University
Pantelis Hatzikazakis – Lennox Industries

Please send any corrections or additions to these minutes to Keith Temple

(Note: List of e-mail addresses removed)

Appendix I.
1275-RP PMSC Notes

See Appendix F, 4c

Appendix J.

1312-RP PMSC Notes

Tuesday, June 26, 2007

Philip Haves, PMS Chair

The goal of the project is to develop a simulation-based testing environment for fault detection and diagnosis tools for air handling units. The contractor is Drexel University and the PI is Jin Wen. The project started in September 2005 and is due to finish in August 2007.

An HVACSIM+ model of one of the four zone single duct VAV systems at the Iowa Energy Center's Energy Resource Center (ERS) has been produced, based on the component models produced in 825-RP. Several component models have been adapted to represent the particular mechanical equipment and controls at the ERS.

The next task is to validate the individual component models and then the system model by comparing their performance predictions with measurements from the ERS. This will take place in two phases – first a comparison with previous measurements at the facility and then a series of experiments in which the contractor will make the additional measurements required. The following task will be to add faults to the models and validate their implementation.

See Appendix F, 4d

Appendix K.

List of Subcommittee and Committee Attendees

FullName	OrganizationName	FDD	Wireless	Building Utility	Research	General Mtg
Alan Vinh	NIST	x	X	x	x	
Arun Vohra	US DOE	x	X	x	x	
Ashish Singhal	Johnson Controls, Inc.					
Barry Bridges	Sebesta Blomberg				x	x
Bill Healy	NIST	x	X	x	x	x
Bill Koran	PECI	x				
Brian Coffey	LBNL	x	X	x	x	x
Carlos Haiad	Southern California Edison	x	X	x	x	x
Carol Lomonaco	Johnson Controls, Inc.	x	X	x	x	x
Chariti Young	ALC					x
Chris Scruton	CEC Pier	x	X	x		
Christian R Taber	Trane					
Damian Ljungquist	JDL Business Services		X	x		
Daniel Choiniere	Natural resources Canada	x	X			x
David Bornside	Siemens Building Tech					
David Holmberg	NIST					
Donald Prather	ACCA					x
Gary Kasper	Honeywell International					
Gene Strehlow	Johnson Controls			x		x
George Naim	Target	x				x
Glenn Remington	Pfizer					
Haorong Li	UNL	x	X	x	x	x
Hwakong Cheng	Taylor Engineering	x				
James Butler	Cimetrics Inc.					

FullName	OrganizationName	FDD	Wireless	Building Utility	Research	General Mtg
James Gartner	Four Seasons Environmental	x				x
Janice Peterson	NEEA					x
Jeffrey Schein	NIST					
Jerine Ahmed	Southern California Gas Co/San Diego Gas & Electric					
Jim Braun	Purdue University	x	X	x		x
Jin Wen	Drexel University	x	X	x	x	x
John House	Iowa Energy Center	x	X	x	x	x
John Seem	Johnson Controls, Inc.	x				
Jonathan Wright	Loughbrough University					
Keith Temple	Field Diagnostic Services	x			x	x
Kris Subbarao	Texas A&M	x	X	x		
Krishnan Gawi	PNNL		X			
Kristin Henemeier	US Davis					x
Lingying Zhao	The Ohio State University					
Martha Brook	California Energy Commission					
Michael Bobker	CUNY					
Michael Brambley	PNNL	x	X	x	x	x
Michael Brandemuehl	University of Colorado					x
Michael Day	ICE Energy					x
Mike Galler	NIST					x
Nabil Nassif	Nevada University	x				
Nancy Jenkins	SCE	x		x		
Natascha Castro	NIST					
Peng Xu	LBNL	x	X		x	x
Pete Secor	Meshnetics	x	X	x	x	x

FullName	OrganizationName	FDD	Wireless	Building Utility	Research	General Mtg
Peter Armstrong	MIT					
Philip Haves	LBNL					x
Piotr Domanski	NIST	x				
Pornsak Songkakul	Siemens Building Technologies	x	X			x
Reinhard Seidl	Taylor Engineering				x	x
Rich Hackner	GDS Associates	x	X	x	x	x
Robert Old	Siemens Building Technologies, Inc.	x	X	x	x	x
Roger Lautz	HGA A&E					x
Sam Borgson	UC Berkeley				x	
Sharon Dinges	Trane Global Controls & Contracting					
Shengwei Wang	The Hong Kong Polytechnic University					
Srinivas Katipamula	PNNL	x	X	x	x	x
Stephen Roth	Carmel Software					
Steven Blanc	PG&E	x	X	x	x	x
Vance Payne	NIST					
Vernon A. Smith	Architectural Energy Corporation				x	x
Wayne Webster	Princess Towers Inc					
Xiaohui Zhou	Iowa Energy Center	x	X	x	x	x
Yanda Zhang	HMG	x	X			
Yosuke Nishi	Yamatake Corporation					

Appendix L.

[personal contact information removed]